DYNAMICS OF DISTRIBUTION AND DENSITY OF PHREATOPHYTES AND OTHER ARID-LAND PLANT COMMUNITIES

Raymond M. Turner
U.S. Geological Survey
Tucson, Arizona, 85717

1 June 1973

Type I Progress Report for Period 1 March - 30 April 1973

Prepared for:

Goddard Space Flight Center
Greenbelt, Maryland, 20771

Publication authorized by the Director, U.S. Geological Survey

Type I Progress Report
ERTS-1

a. Title: Dynamics of Distribution and Density of Phreatophytes and other Arid-Land Plant Communities

ERTS-1 Proposal No.: SR 243-8

b. GSFC ID No. of P.I.: IN 411

c. Statement and explanation of any problems that are impeding the progress of the investigation: None

d. Discussion of the accomplishments during the reporting period and those planned for the next reporting period: Measurements of plant coverage have been made at five sites during all ERTS overpasses beginning with cycle 4 (Fig. 1). The percent of soil covered by plants increased to maximum values during the present reporting period and then, by the time of report preparation (late May), decreased abruptly to what are probably annual minima. These measured changes are indicative of plant productivity at grassland and desert sites of varying soil conditions and can be used to interpret changes on only a small part of the test site. Qualitative evaluation of large areas has been continued by documenting through color photographs plant condition at many specific sites during the time of each satellite overpass.

The PI will visit Stanford Research Institute during the week of May 14 to help establish procedures for mapping areas of dense plant coverage, by use of the Electronic Satellite Image Analysis Console (ESIAC). To date, a procedure by which MSS-5 vidicon displays are subtracted from MSS-6 displays of the same scene appears promising. Should sun angle effects cause large changes in scene radiance, a technically more difficult manipulation using the ratio MSS6/MSS5 will be attempted.

e. Discussion of significant scientific results and their relationship to practical applications or operational probelms including estimates of the cost benefits of any significant results (To be prepared in scientific abstract form of 200 words or less): None

f. A listing of published articles, and/or papers, pre-prints, in-house reports, abstracts of talks, that were released during the reporting period: None

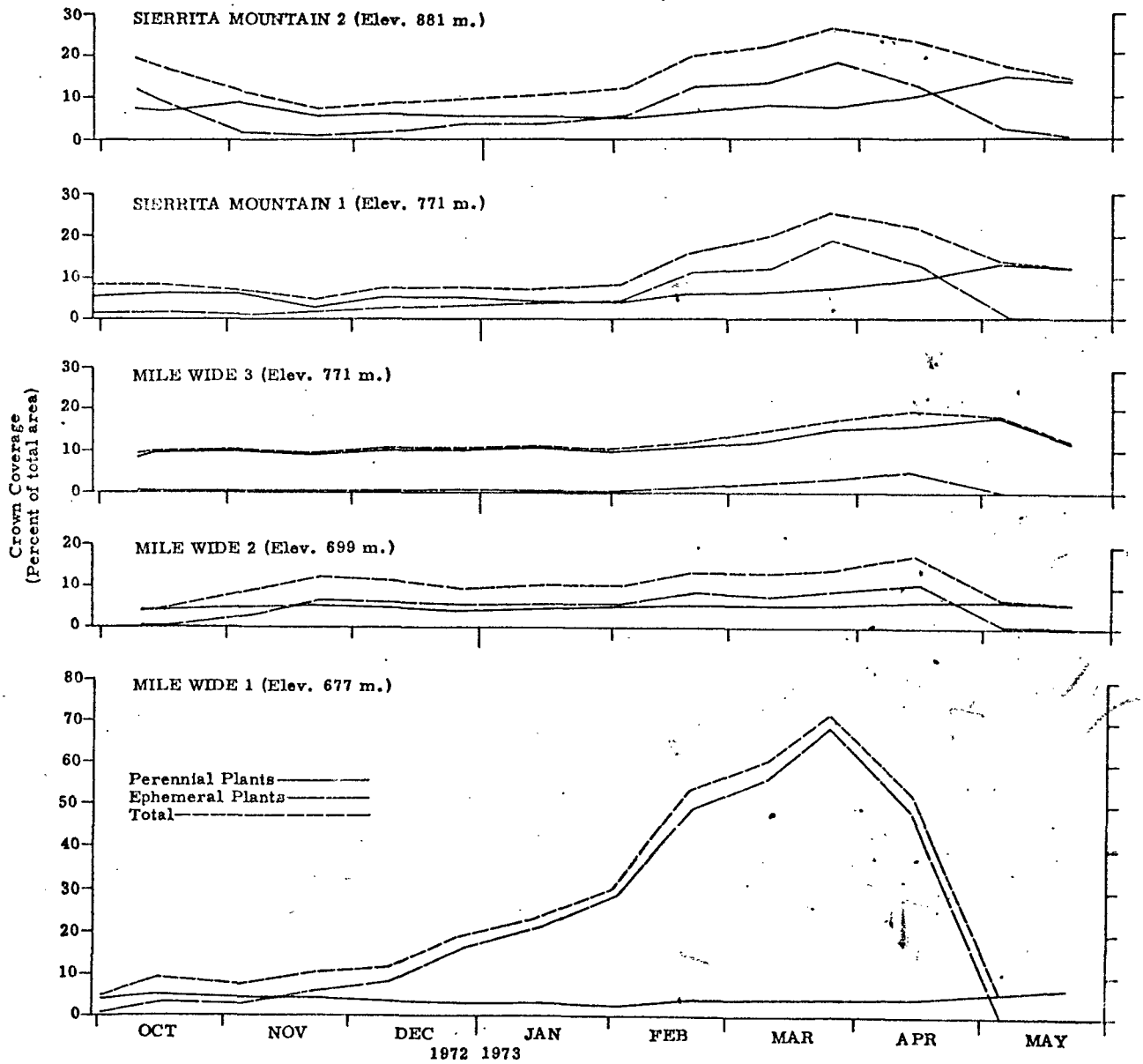
g. Recommendation concerning practical changes in operations, additional investigative effort, correlation of effort and/or results as related to a maximum utilization of the ERTS system: None

h. A listing by date of any changes in Standing Order Forms: None during report period

i. ERTS Image Descriptor forms: None

j. Listing by date of any changed Data Request forms submitted: None

k. N/A



CHANGES IN PLANT CROWN COVERAGE AT FIVE STATIONS NEAR TUCSON, ARIZONA